THOMSON MEDSTAT

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The Medicare
Senior Risk Reduction Demonstration

Demonstration Design

Presented to:

National Academies Workshop on Interventions to Accelerate the Decline in Disability Among the Elderly

Presented by:

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Credits

- Designed by Medstat/Cornell under a contract from the Center for Medicare and Medicaid Services
- Medstat/Cornell leadership
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  - David Shechter, Ph.D., Medstat, Project Director
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- CMS:
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Credits (cont.)

- Expert Panel:
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  - James Fries, MD, Stanford University School of Medicine
  - Kate Lorig, RN, Dr. MPH, Stanford Patient Education Research Center
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  - Nancy Whitelaw, Ph.D.,National Council on Aging
  - Eric Zimmerman, MPH, MBA, Relay Health

References

- *Senior Risk Reduction Demonstration: Demonstration Design.* Medstat/Cornell report to CMS, March 8, 2004
- *Senior Risk Reduction Demonstration: Final Project Report.* Medstat/Cornell report to CMS, March 8, 2004

Also of interest:

- Ozminkowski, Goetzel, Wang, Shechter, Musich, Bender, Edington The Savings Gain from Participation in Health Promotion Programs for Medicare Beneficiaries. *J. of Occupational and Environmental Medicine.* Forthcoming.

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SRRD Objectives

- Estimate the impact of a risk reduction intervention on Medicare beneficiary risk, health, health care utilization and health care expenditures;
- Identify and test tailored intervention materials;
- Test the program's ability to make referrals to community/volunteer programs;
- Determine whether program features are acceptable to beneficiaries;
- Obtain other information that would help CMS design and launch a national program
  - Project impacts of a national program
  - Management and administration

Operating Assumptions

- Voluntary participation
- Focus on self-care
- Tailoring
- Central coordination
- Referral to community resources
- Multiple risk focus
- Attractive program for beneficiaries
- Rigorous evaluation of outcomes

Quick Review of SRRD Design and Process

- Random sample of eligible beneficiaries are offered the opportunity to complete an HRA and return it to a vendor
- Those who choose to return the HRA are randomly assigned to one of three arms:
  1. Standard Intervention
  2. Enhanced Intervention
  3. Untailored information (“placebo”)
- All beneficiaries offered the opportunity to complete an HRA are compared to another randomly selected group of beneficiaries using administrative data

Quick Review of SRRD Design and Process (2)

- The interventions (both arms 1 and 2) include the following elements:
  - Centrally administered initial HRA assessment followed by a tailored feedback report;
  - Prioritization of risk factors;
  - Computerized triage of participants into various risk reduction modules;
  - Provision of tailored risk reduction materials delivered via mail, Internet or telephone (health coaching) to program participants;
  - Linking participants with national or community resources, social support networks and volunteer opportunities.
- Arm 1 offers a lower cost “standard” intervention
- Arm 2 offers a higher cost “enhanced” intervention expected to achieve improved risk reduction results
- In arm 3, the participant receives only a generic letter with tips on staying healthy

Health Risk Appraisal

- Designed by vendor
- Tailored to seniors
- Administered to all target beneficiaries at least once per year, over three years
- Vendors might administer more frequently to some, especially as part of *enhanced* intervention
- $10 incentive to return annual HRA each year
- Informed consent form must be returned with 1st HRA

Tailored feedback

- Vendor designed reports
- Computerized
- Prioritized recommendations
- Supporting materials
- Delivery via internet at the beneficiary's option
- Feedback report may be shared by the participant with his/her physician

Behavioral change modules

- Vendor designed
- Algorithm-driven triage into risk-specific interventions
- Individualized counseling
- More extensive under *enhanced* than *standard*
  - Offered to more participants
  - More frequent interaction
  - More use of telephone

Community Referrals

- Advice on obtaining and using local services
- National resources to identify local services (SRRD-N)
  - 800 numbers
  - Internet sites
- Local resources based in a given community (SRRD – Informational and Referral/Assistance – I&R/A):
  - Direct referral to local services

What we expect to achieve:

- High participation (40-50%) driven by beneficiary acceptance of and satisfaction with the program
- Health improvement, risk reduction, behavior change, improved functioning, reduced disability (in the order of a 5% improvement)
- At a minimum, cost neutrality (in delivery of both arms 1 and 2) and potentially a positive return on investment (ROI) for Medicare reimbursements to health care providers

SRRD Research Design

- Topics to be covered:
  - Evaluation Questions
  - Structure of the Demonstration
  - Sample Size Requirements
  - Evaluation Data
  - Analysis

Evaluation Questions

Program Initiative ⇓	Senior Risk Reduction Intervention
Direct Effects ⇓	1. Will vendors implement the intervention as envisioned? 2. Will Medicare beneficiaries participate in the intervention and utilize the services and information it provides?
Intermediate Outcomes ⇓	3. Does intervention affect beneficiary health status and quality of life? 4. Does intervention affect beneficiary health care utilization and costs?
Final Outcomes	5. Does intervention generate net Medicare program savings? 6. What are the advantages, disadvantages, and challenges to implementation of the intervention? 7. What are the social benefits and costs of the intervention?

Targeted beneficiaries for the demonstration

- Medicare enrollees in fee-for-service
- Exclusion criteria: Beneficiaries who are…
  - Under 67 and over 74
  - Medicare HMO
  - Part A only
  - Institutionalized

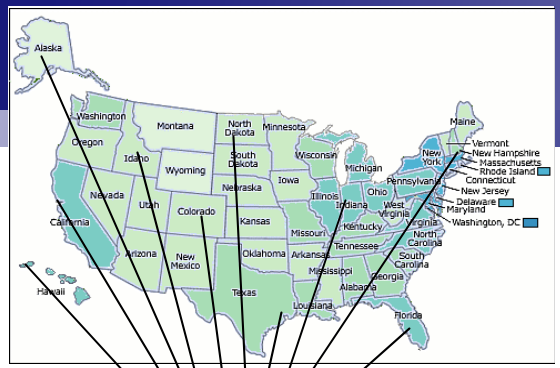
Demonstration Design: Two Components

- The National Component (SRRD-N)
  - Nationally representative sample of target beneficiaries
  - Referrals to national resources and organizations
- The Information and Referral/Assistance Component (SRRD-I&R/A)
  - Tests the incremental effects of using the SRRD along with best practice I&R systems
  - To be conducted in communities with best practice systems as identified by National Council on the Aging (NCOA)

Intervention

	SRRD-N	SRRD-I&R
Arm 1	HRA + Tailored Feedback + *Standard* follow up •Offered annually for 3 years •Tailored behavior change/risk reduction modules •Pro-active phone counseling/ health coaching, delivered selectively • Referral to national resources • Internet at the option of the participant • Meets cost constraint	+ best practice I&R
Arm 2	HRA + Tailored Feedback + *Enhanced* follow up *Standard* plus: •More intense programming and follow-up, delivered selectively • Meets cost constraint	+ best practice I&R
Arm 3	HRA + Untailored Feedback only •Offered annually for three years •Meets cost constraint	Same

SRRD-N Sampling and Recruitment



Zip codes randomly assigned to Vendor *V*

CMS randomly selects beneficiaries

Target Beneficiaries

Administrative Control Beneficiaries

CMS offers opt out

"Opt-in" Target Beneficiaries

Vendor *V* distributes HRA; some beneficiaries return

Non-participants

Participants

CMS randomly assigns participants to arms

Arm 1

Arm 2

Arm 3

Definition of Terms

- Target beneficiaries – individuals that SRRD targets for participation in Arms 1, 2, or 3, and to whom CMS sends an invitation
- Participants – target beneficiaries who submit a completed HRA
- Non-participants – target beneficiaries who do not submit a completed HRA
- Interventions – services that beneficiaries receive in Arm 1 and Arm 2
- Administrative control group – a separate set of individuals, comparable to the target beneficiaries, who are not invited to participate in the SRRD
- Study attrition – failure to respond to one or more surveys
- Program attrition – failure to respond to more than one HRA
- Demonstration population – all beneficiaries who are in some way measured in the demonstration, including target beneficiaries and administrative control beneficiaries

Approach to Impact Estimation

PRIMARY ANALYSIS – SRRD-N

- Net impacts for *standard* and *enhanced*:
  - Compare Arms 1 and 2 to Arm 3
  - Impact of Arm 3 expected to be negligible ("placebo")
- Differences in mean outcomes
  - Arm 1 mean minus Arm 3 mean (N_1)
  - Arm 2 mean minus Arm 3 mean (N_2)
- Comprehensive set of outcomes
  - Health status and functioning
  - Behavior change
  - Health risk factors
  - Health care utilization
  - Medicare expenditures

Approach to Impact Estimation (cont.)

SECONDARY ANALYSIS – SRRD-N

- Additional impacts
  - Were there additional impacts on those in the target group? If so, how large were they?
    - All were contacted
    - All those who did not opt out were sent an HRA
    - Some returned their HRA and received general information (Arm 3 .. placebo)
- Estimation
  - Compare mean outcomes observed in administrative data for *all target beneficiaries* (i.e., regardless of whether they participated) to means for the administrative control group
    - Utilization, expenditure, diagnostic, and mortality measures
  - The difference in means measures the *gross impact per beneficiary*, including
    - The net impacts on those who participated in Arms 1 and 2, and
    - Any additional impacts

SRRD-N Sampling Frame – Notes

- Assignment of zip code areas to vendors avoids multiple vendors contacting beneficiaries in the same household
- To avoid conflicts with other demonstrations and the SRRD-I&R component, relevant new enrollees or zip code areas will be excluded from the SRRD-N sampling frame
- Final selection and recruitment
  - CMS randomly selects beneficiaries, distributes notices, receives opt-out replies, provides names of remaining beneficiaries to vendors
  - Vendors distribute their HRAs, provide response information to CMS
  - CMS assigns participant households to arms
    - A few households will have multiple new enrollees
    - All new enrollees in household invited to participate, with the same vendor, in the same arm
    - One participant is “primary” and will be the focus of the evaluation

SRRD-I&R Sampling and Recruitment Frame

- 10 Communities
  - 3,000+ new enrollees each
  - Exemplary local I&R system
  - CMS selects, based on NCOA recommendations
  - Zip code areas excluded from sampling frame for SRRD-N
- CMS:
  - Randomly assigns two communities to each vendor
  - Selects beneficiaries at random for target group (no segmentation by zip code)
- Rest of recruitment procedure is the same as in SRRD-N

SRRD – I&R Analysis

PRIMARY ANALYSIS

- Like primary analysis for SRRD-N
  - Net impacts of Arm 1 and Arm 2 (both including I&R) versus Arm 3 (no I&R)
  - Comprehensive set of outcome measures

MARGINAL IMPACT ANALYSIS

- What were the marginal impacts of adding I&R with exemplary services to Arm 1 and Arm 2?
  - Difference between estimated net impacts from SRRD-I&R and SRRD-N, after statistical adjustment for:
    - Differences in beneficiary characteristics at baseline (age, sex, race, risks, health, diagnoses, utilization, expenditures)
    - Differences in local characteristics (e.g., income per capita, population density, Medicare cost adjustors, % Medicare HMO)

Sampling and Recruitment Summary

	SRRD-N	SRRD-I&R
Sampling frame	Target population to be determined ➢Exclude other demonstrations ➢Segmented by zip codes	New enrollees in 10 communities ➢local I&R system ➢3K+ beneficiaries per community
5 Vendors	Serve target beneficiaries in randomly assigned zip code areas	Each operates in 2 randomly assigned communities
Administrative controls	Randomly selected from same zip code areas	None
Recruitment	CMS randomly: ➢selects target beneficiaries ➢delivers notices ➢receives opt-out replies ➢provides names of remaining beneficiaries to vendors Vendors: ➢send HRA ➢receive responses ➢Transmit respondent information to CMS CMS assigns HRA respondents to arms	

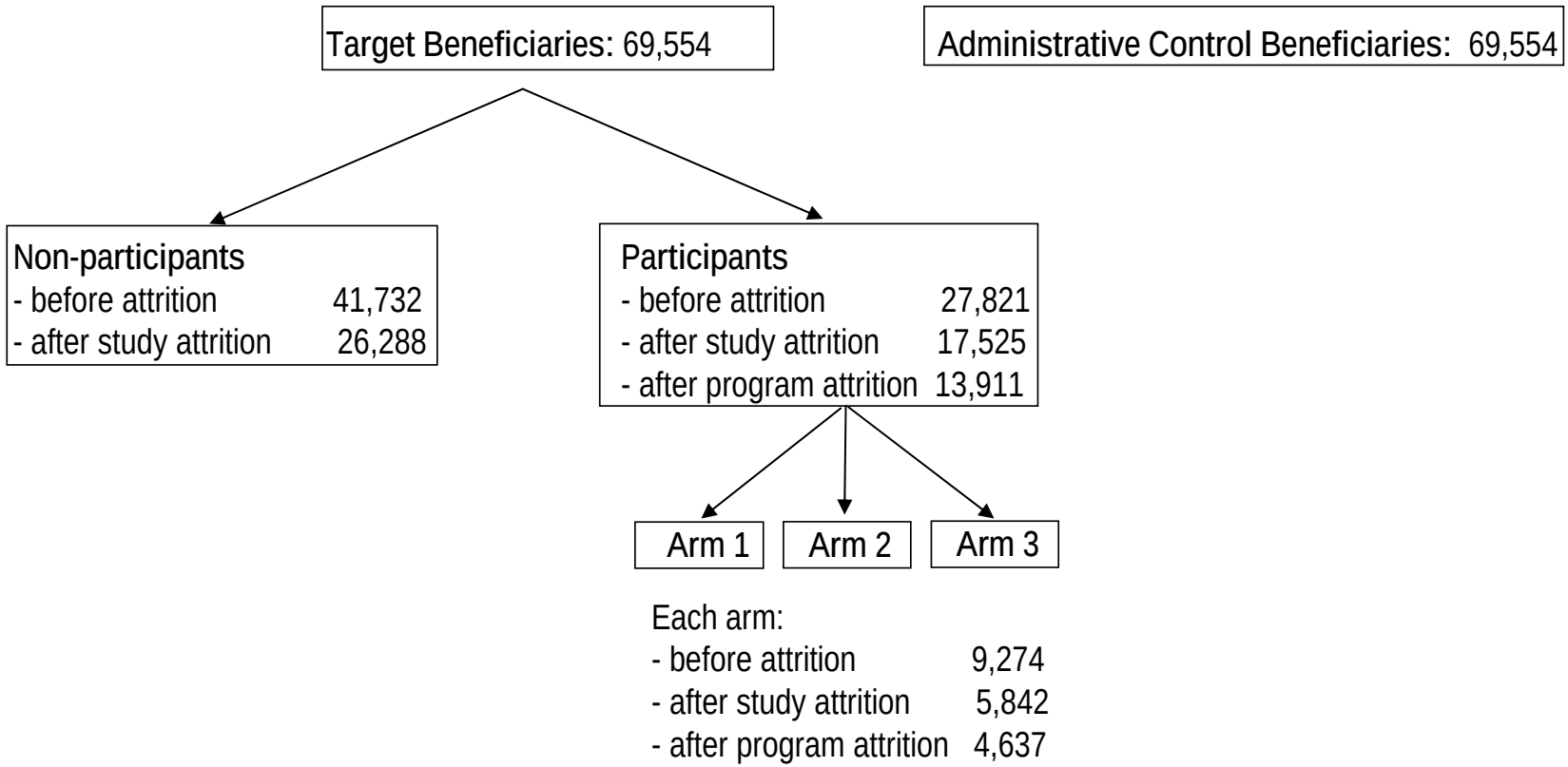
Sample Sizes – Objectives

- Meet precision requirements for primary groups
  - Each vendor in the SRRD-N
  - African American and non-African American participants
  - All beneficiaries in the SRRD-I&R
- Detect an effect for a categorical variable as small as 5.0 percentage points for each primary group
- Other considerations:
  - Ability to detect mean Medicare expenditure reduction at least as large as the mean SRRD cost
  - Interest in detecting many specific impacts for many other subgroups
  - Precision is conditional on the beneficiaries selected

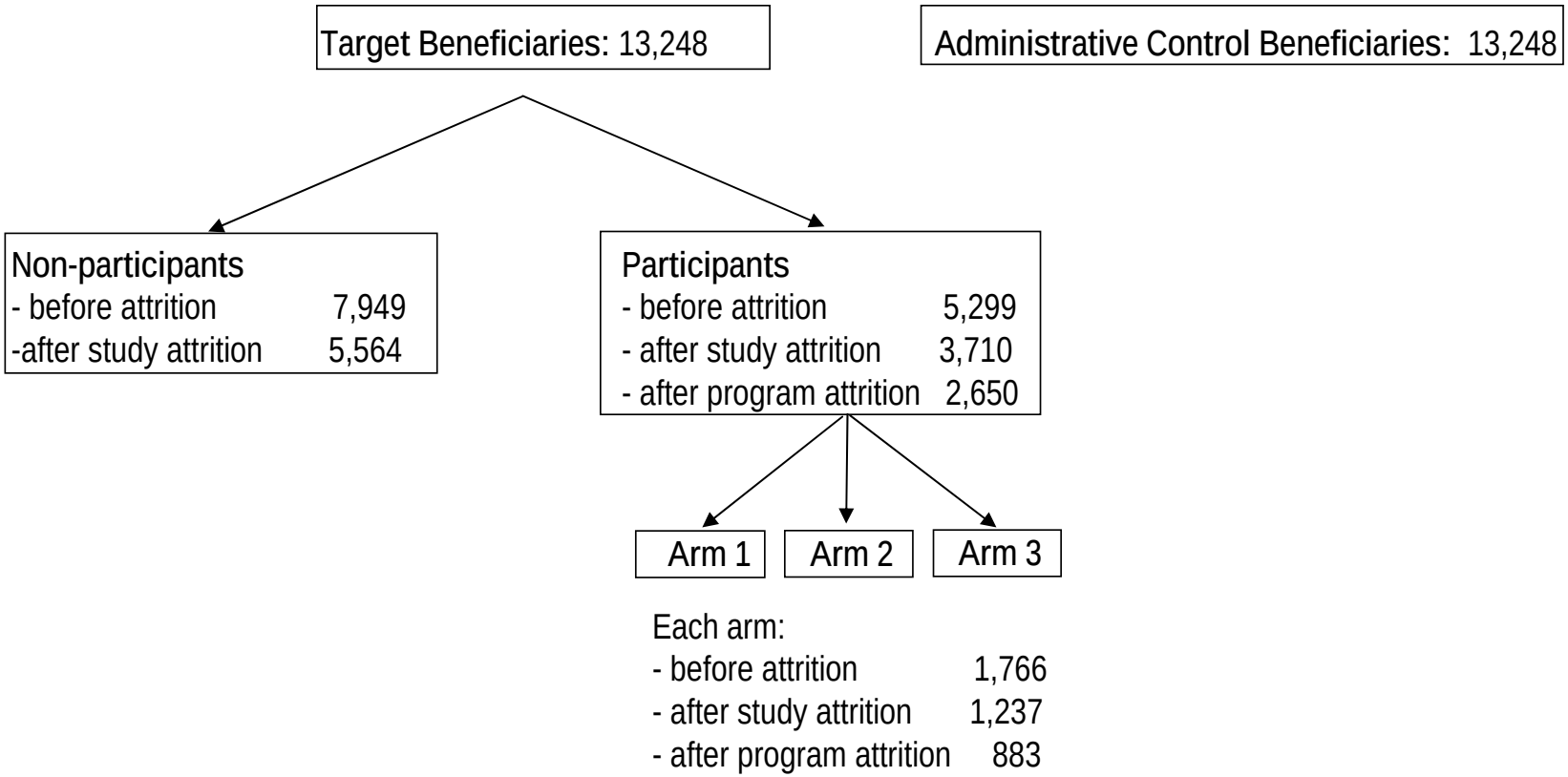
Sample Sizes – Assumptions

- 40% participation rate
  - Contingency plan for 25%
- 30% study attrition at end of 3 years
  - Not equivalent to program attrition
  - Applicable to 3rd-year survey responses of participants
  - Contingency plan for 40% attrition
- 50% program attrition at end of 3 years
  - Does not affect sample sizes
  - Not directly relevant to accuracy of estimates based on survey data
  - Directly relevant to accuracy of estimates based on HRA data

Total Sample Sizes for SRRD-N



Sample Sizes per Vendor for SRRD-N



Examples of Minimum Detectable Differences (MDD) for Net Impacts

Variable	Preliminary MCBS Estimates, Age 65-74		Each Vendor		All Vendors	
	Mean	SD	MDD	% of Mean	MDD	% of Mean
Hypothetical variable	50.0%	50.0%	5.0%	10.0%	2.2%	4.5%
Part A reimbursement	$ 2,393	$ 8,745	$ 875	36.5%	$ 391	16.3%
Part B reimbursement	$ 2,215	$ 4,014	$ 401	18.1%	$ 180	8.1%
Part A&B reimbursement	$ 4,608	$ 11,340	$ 1,134	24.6%	$ 507	11.0%
Outpatient visits	5.9	5.8	0.6	9.9%	0.3	4.4%
Inpatient days	3.0	8.3	0.8	27.4%	0.4	12.2%
Percent currently smoking	23.5%	42.4%	4.2%	18.0%	1.9%	8.1%
% quit smoking -- one year	2.5%	15.6%	1.6%	62.4%	0.7%	27.9%
% quit smoking -- 3 years (approx.)	5.0%	21.8%	2.2%	43.6%	1.0%	19.5%
Overweight or obese (BMI 25+)	67.7%	46.8%	4.7%	6.9%	2.1%	3.1%

- MDD for net impacts on costs, outpatient visits, and inpatient days will be lower if participation rates are relatively low for those with relatively high health care utilization

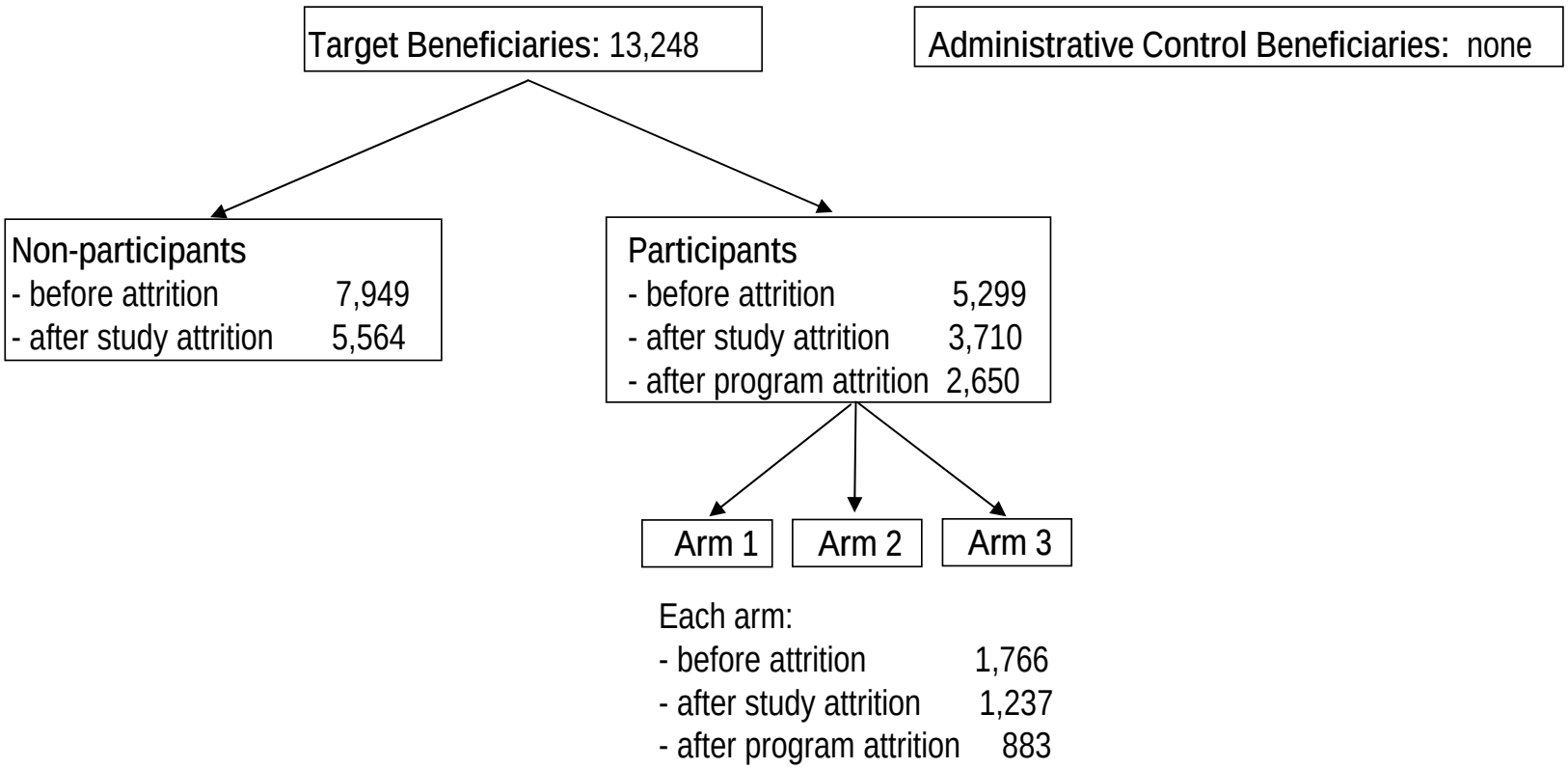
Minimum Detectable Differences for Changes will be Smaller, as Illustrated for Smoking Cessation

Variable	Preliminary MCBS Estimates, Age 65-74		Each Vendor		All Vendors	
	Mean	SD	MDD	% of Mean	MDD	% of Mean
Hypothetical variable	50.0%	50.0%	5.0%	10.0%	2.2%	4.5%
Part A reimbursement	$ 2,393	$ 8,745	$ 875	36.5%	$ 391	16.3%
Part B reimbursement	$ 2,215	$ 4,014	$ 401	18.1%	$ 180	8.1%
Part A&B reimbursement	$ 4,608	$ 11,340	$ 1,134	24.6%	$ 507	11.0%
Outpatient visits	5.9	5.8	0.6	9.9%	0.3	4.4%
Inpatient days	3.0	8.3	0.8	27.4%	0.4	12.2%
Percent currently smoking	23.5%	42.4%	4.2%	18.0%	1.9%	8.1%
% quit smoking -- one year	2.5%	15.6%	1.6%	62.4%	0.7%	27.9%
% quit smoking -- 3 years (approx.)	5.0%	21.8%	2.2%	43.6%	1.0%	19.5%
Overweight or obese (BMI 25+)	67.7%	46.8%	4.7%	6.9%	2.1%	3.1%

Sample Sizes – Worst-case Scenario

- Assumptions:
  - Participation rate of 25%
  - Study attrition rate of 40%
- The SRRD-N would require:
  - 123,652 target beneficiaries
  - 30,913 participants before attrition (6,183 per vendor)
- The SRRD-I&R would require:
  - 24,732 target beneficiaries (2,473 per community)
  - 6,183 participants before attrition (1,237 per vendor)

Sample Sizes for SRRD-I&R



Data Collection: Summary

	Process Analysis	Participation Analysis	Health Risk Outcomes	Health Status Outcomes	Health Care Utilization	Medicare Costs	Cost Benefit Analysis	Feasiblity Analysis
HRA Data			X					X
Other Vendor Data	X	X						X
Beneficiary Survey Data	X	X	X	X				X
Medicare Enrollment Data		X						X
Medicare Claims Data					X	X	X	X

Number of observations by data type

Eligible Beneficiary Group	CMS Admin. Data	Vendor Data				Beneficiary Phone Survey					
		Baseline	Year 2	Year 3	Exit	Baseline Sample	Responses				
							Baseline	Year 2	Year 3	Exit	Total
SRRD - N											
Administrative Controls	69,554										
Treatment Beneficiaries	69,554										
Per vendor	13,911										
Non-participants (Year 1)	41,732					1,766	1,324			927	2,251
Per vendor	8,346					353	265			185	450
Participants (Year 1)	27,821	27,821	22,082	17,526	13,911	5,297	3,973	3,528	3,132	2,781	13,413
Per vendor	5,564	5,564	4,416	3,505	2,782	1,059	795	706	626	556	2,683
Per arm	9,274	9,274	7,361	5,842	4,637	1,766	1,324	1,176	1,044	927	4,471
SRRD - I&R											
Treatment Beneficiaries	13,911										
Per vendor	2,782										
Non-participants (Year 1)	8,346										
Per vendor	1,669										
Per community	835										
Participants (Year 1)	5,564	5,564	4,416	3,505	2,782	4,176	3,132	2,781			5,913
Per vendor	1,113	1,113	883	701	556	835	626	556			1,183
Per community	556	556	442	351	278	418	313	278			591
Per arm	1,855	1,855	1,472	1,168	927	1,392	1,044	927			1,971
					Survey Totals	11,239	8,429	6,309	3,132	3,708	21,578

Data Collection Notes

- **HRA Data**
  - Collected annually (at a minimum) and used to make vendor-specific comparisons over time among SRRD participants; to assess changes in risk factors and health behaviors
  - Vendors will NOT be required to standardize measures of risk
  - Vendors will be required to work with evaluator to define and report on measures of risk that can be ascertained from their HRAs
- **Other Vendor Data**
  - Process data related to solicitations, contacts/attempts, non-response, and services provided
  - Qualitative data, collected via interview, to gather further information about the SRRD implementation and operations

Data Collection (cont'd)

Beneficiary telephone survey

- Baseline and at end of each of 3 years
- Administered to participants and sample of non-participants from target group
- $10 for completion of each survey (in addition to $10 for completion of annual HRA)
- Computer Assisted Telephone Interviews
- Target length of each interview: 10-20 minutes
- Survey topics:
  - Participants: general health, motivation, standard set of risk factors, satisfaction with SRRD
  - Non-participants: general health, motivation, standard set of risk factors, reasons for not participating in SRRD
- Used to estimate impacts, assess reasons for non-participation, and assess beneficiary satisfaction

Data Collection (cont'd)

- **Medicare Program Administrative Data**
  - Enrollment data with limited information about beneficiary characteristics
  - Claims data with diagnostic, health care utilization and cost information
  - Only source of outcome data for estimates of gross impacts

Data Analysis

- Process Analysis
  - Use survey, vendor, and qualitative data to:
    - Document how the program was implemented
    - Assess beneficiary acceptance of and need for the SRRD
    - Provide contextual information to interpret impact findings
- Participation Analysis
  - Use administrative and survey data to assess:
    - Who participates and who does not
    - Relationships between participation and beneficiary, area, and vendor characteristics
    - Reasons for non-participation

Data Analysis (cont'd)

- Impact Analysis
  - Use survey, HRA and administrative data to:
    - Assess net impacts on outcomes under standard and enhanced interventions for both SRRD-N and SRRD-I&R
    - Estimate gross and additional impacts on all beneficiaries under SRRD-N
    - Estimate marginal impacts of I&R
- Cost-Benefit Analysis
  - Use administrative data to:
    - Estimate net Medicare program savings due to SRRD
    - Model and project long-term program savings
- Feasibility Analysis
  - Use all study findings to explore feasibility and inform design of national rollout